Spread Your Spores

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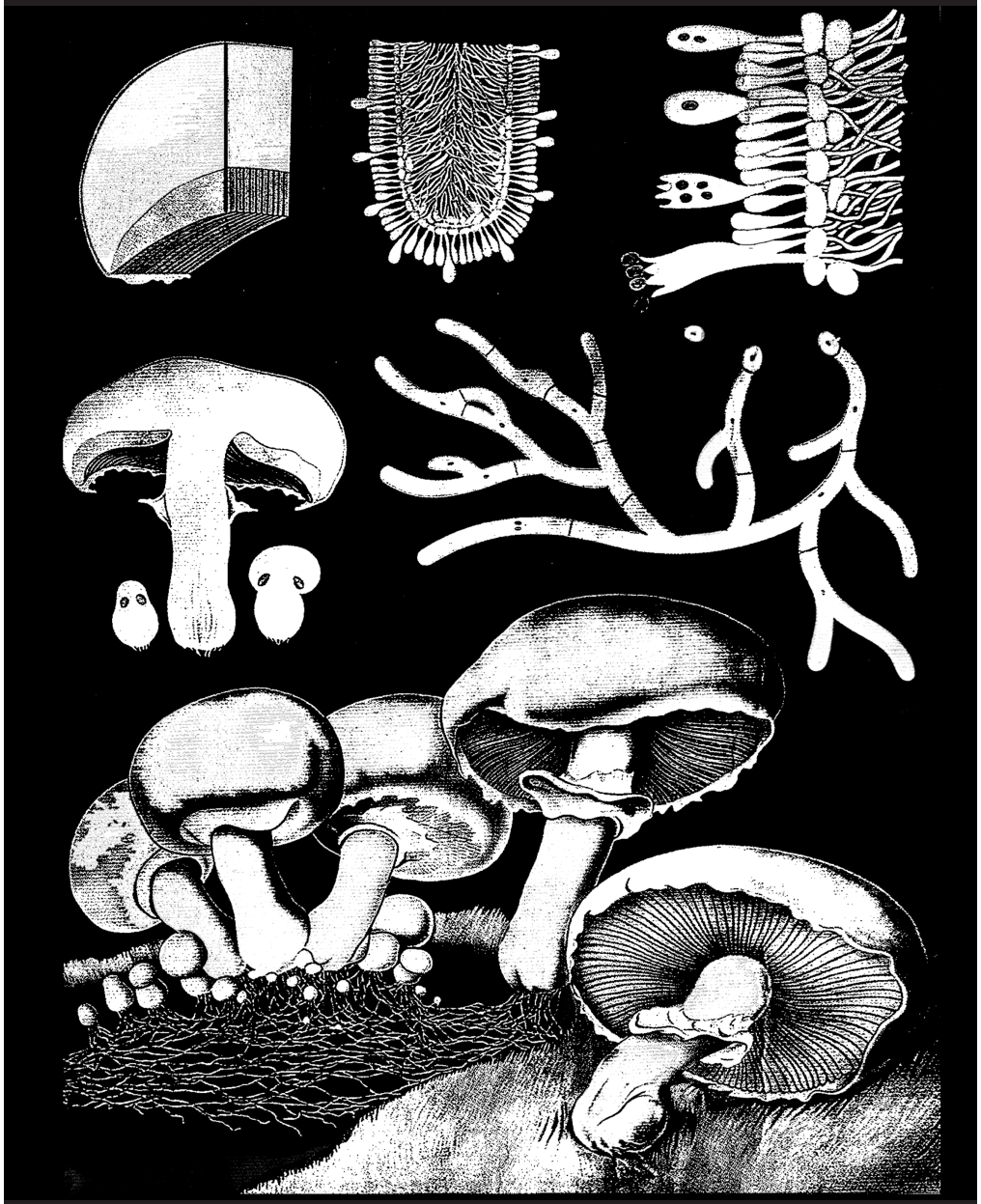
Radical Mycology

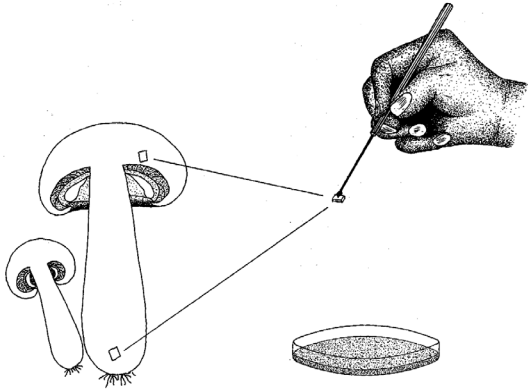


An SLF Primer

SPAWN A ANARCHY
LIBERATE SPORES

Notes

Radical Mycology
An SLF Primer



Ed. 1.1, 2010

DISCLAIMER

This publication is intended for entertainment and information purposes only. It is not meant to encourage nor condone illegal activity. The SLF holds no affiliation to the Earth Liberation Front nor the Animal Liberation Front as the name "Spore Liberation Front" refers to the term frequently used to describe the ejection of a spore from its host mushroom (i.e. "spore liberation").

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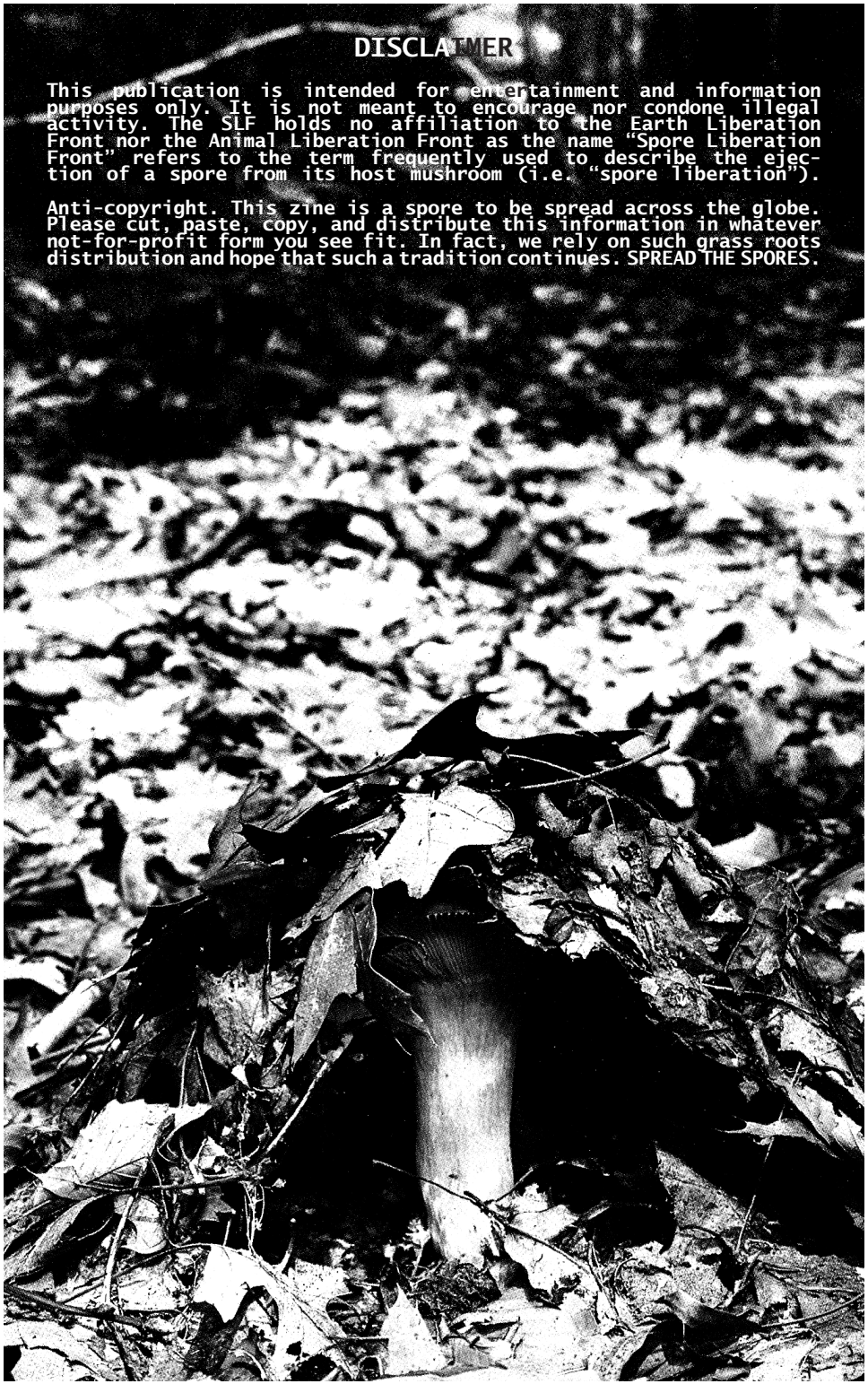

Recommended Reading

Much of the information we pooled for this zine came from the following sources, all of which we highly recommend.

Identification
- All The Rain Promises And More – David Arora
- Mushrooms Demystified – David Arora
- National Audubon Society Field Guide To North American Mushrooms – Gary H. Lincoff
- Pacific North West (PNW) Key Council - **http://www.svims.ca/council/keys.htm**
- Matchmaker - **http://www.pfc.cfs.nrcan.gc.ca/biodiversity/matchmaker/index_e.html**
- Mushrooms of the Pacific North West - Steve Trudell

Cooking
- Mushroom – Johnny Acton & Nick Sandler
- The Chanterelle Book – Olle Persson
- The Complete Mushroom Book: The Quiet Hunt – Antonio Carluccio
- Wild About Mushrooms - **http://www.mssf.org/cookbook/contents.html**

Cultivation
- Mycelium Running – Paul Stamets
- The Mushroom Cultivator – Paul Stamets
- Growing Gourmet & Medicinal Mushrooms - Paul Stamets

Dying & Papermaking
- The Rainbow Beneath My Feet - Arleen R. Bessette
- Mushrooms For Dyes, Paper, Pigments, Myco Stix – Miriam Rice
- International Mushroom Dye Institute (IMDI) - **http://www.sonic.net/dbeebee/IMDI.htm**
- Paper Making Photo Tutorial - **http://www.allfiberarts.com/library/aa04/aa072104i.htm**

Sacred Mushrooms
- Magic Mushrooms Around the World - Jochen Gartz
- Psilocybin Mushroom Handbook – L.G. Nicholas & Kerry Ogame
- Food Of The Gods – Terence Mckenna

Friends & Others
- **http://www.radicalmycology.wordpress.com**
- **http://www.mycorant.com**
- **http://punkrockpermaculture.com/**
- Tinder Polypore ember carrying techinique photo tutorial at **www.wildwoodsurvival.com/survival/fire/tinder/tinderfungus/spolypore/index.html**

Submissions

We wish to mention here that the SLF primer is an ever changing work in progress. As new information and revelations come out we plan to put out new editions. We also strongly desire to hear from other radical mycologists around the globe, expanding our mycelial network and (hopefully) getting contributions in the process. We encourage all submissions, mycoexperiment reports, guerilla mushrooming stories, etc. Contact us via email or the blogosphere. You are the SLF...contribute!

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Glossary

- **Ascomycete**: Fungi whos spores grow in a sac-like structure called an ascus.
- **Basidiomycete**: Fungi whos spores grow off club-shaped end cells called basidia.
- **Enzyme**: A protein that creates a biochemical reaction by acting as a catalyst.
- **Ethomycology**: The human use of mushrooms.
- **Entheogen**: A substance that is ingested to produce a nonordinary state of consciousness for religious or spiritual purposes. Literally "creates god within" in Greek.
- **Flush**: A crop of mushrooms collectively forming within a defined time period, often repeating in a rhythmic fashion.
- **Fruiting**: The event of mushroom formation and development.
- **Fruiting body**: The above-ground fleshy entity which most people associate with the term "mushroom."
- **Hypha(e)**: The filaments that appear from spores after germination.
- **Mushroom**: In this zine, we apply the term "mushroom" not just to fruiting bodies but also to the types of fungi that produce them. This way, we discern from the so-called "lower" fungi that do not form distinct fruiting bodies (e.g. molds, yeasts, and mildews).
- **Mycelium**: Fungal network of threadlike cells.
- **Mycology**: The study of fungi.
- **Mycophile**: A person who likes mushrooms, as opposed to a
- **Mycophobe**: A person who fears mushrooms.
- **Rhizormorph**: A dense mass of interwoven hyphae forming a root-like structure.
- **Spawn**: Any material impregnated with mycelium which is later used to inoculate more massive substrates.
- **Sclerotium**: (pl. sclerotia) Interwoven multihyphal structures that create a compact mass capable of prolonged periods of survival.
- **Substrate**: Any organic material on which mushroom mycelium will grow (e.g. straw, sawdust, compost, or soil).

Jokes!

Q.) Why did the mushroom go to the party?
A.) Because he was a fungi!

Q.) Why did the fungi leave the party?
A.) There wasn't enough mushroom!

Q.) What kind of soap do mushrooms use?
A.) Ex pholiota-ating body wash

Q.) Which mushrooms are best at staying up to date on the forest news?
A.) The ones with decurrent gills

Q.) What did the cranky old Trametes say to you the young Trametes on the upper shelf?
A.) "Quit makin' all that bracket!"

Q.) What do hipster Amanitas listen to?
A.) Death Cap for Cutie

Q.) Why couldn't the Bolete reproduce?
A.) Its tubes were tied

Q.) How many mycologists does it take to screw in a light bulb?
A.) 10, one to screw in the light bulb and 9 to argue about what kind of light bulb it was.

Q.) What did the mushroom say after being stomped on by an errant, witless child?
A.) "Ouch, my back sure is spore!"

Q.) What was Mushroom Jesus's occupation?
A.) A sporocarpenter

Q.) What did the janitor say when his boss told him to clean up the culture spill?
A.) "You triclomopsis!!"

Q.) How can you tell when you're turning into Mushroom Jesus?
A.) You get sterigmata on your hands & feet

Q.) What kind of soda do mushrooms drink?
A.) Fomitopsis piniCOLA!

Q.) What happens when you leave your jacket in my yard?
A.) It becomes mycota

Q.) What grows in the water, eats decaying plants and has grey gills?
A.) A fish, duh.

And So It Goes

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- **Notes / Tips**
- **Death Cap** (*Amanita phalloides*)
- **Sulfur Tuft** (*Naematoloma/Hypholoma fasciculare*)
- **Honey Mushroom** (*Armillaria spp.*)
- **Oyster Mushroom** (*Pleurotus spp.*)
- **Turkey Tails** (*Tramates versicolor*)
- **Pacific Golden Chanterelle** (*Cantharellus formosus*)
- **Red-Belted Polypore** (*Fomitopsis pinicola*)
- **Morels** (*Morchella esculenta & elata)*
- **Shrimp Mushroom** (*Russula xerampelina*)
- **Potent Psilocybe** (*Psilocybe cyanescens*)
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A Call To Sporulate:

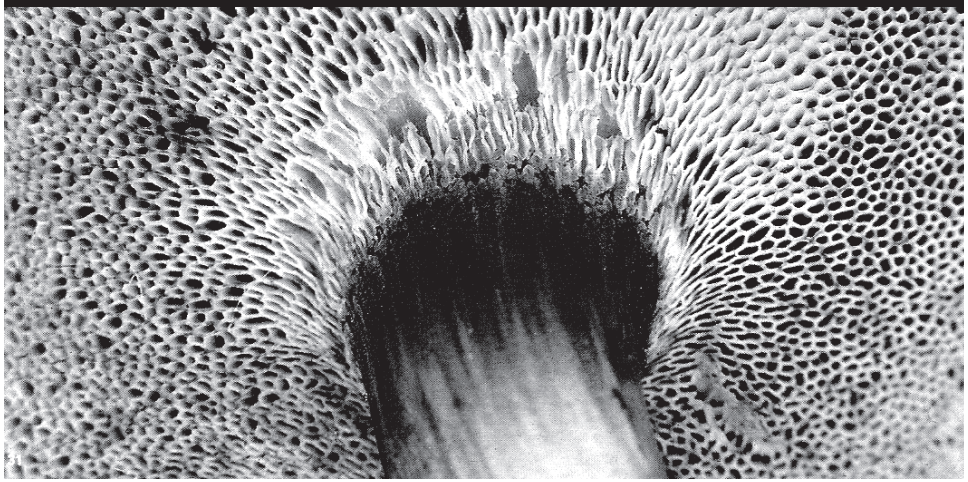
All life is interconnected. How we choose to spend the few years we're allotted on Earth—from the interactions we have with each other to the ways we choose to heal or steal from the planet—is a serious decision with measurable consequences. Our actions as individuals determine not just how our day will unfold but how future generations will be able to live. We are born with the privilege to determine what quality of air our children will breathe, what temperatures their planet will maintain, what fauna and flora they will gaze at in wonder.

And yet, as self-evident as this fact may be, it sadly seems inacted upon by the vast majority of the world. For if all individuals truely took the time to reflect upon the impact of their actions and chose to actually do something about it, we would live in a world filled with more human contributors to the community of life, not just conquerors of it. With the incredible power the human species has stolen from the earth, comes the incredible responsibility to facilitate other species' reclamation of our planet. Indeed, choices as simple as how one chooses to interact with nature, to feed themself, or to survive and provide for themself, are ones that, from a critical standpoint, should not be taken lightly.

When we choose to affect the world around us directly, we begin to live our lives as if they actually mattered. We begin to realize the potential every person has for making this world a better place to live and thrive in. We begin to grow.

In many ways, one's conscious relationship with mushrooms can directly foster this desire for change. The complex life cycle of mushrooms provides profound and novel examples (to civilized humans) of networking between different species and environments not exhibited by most other life forms. These actions show a concern for not just the mushroom involved but for the surrounding environment as well. We believe that as one learns more about these habits, and the ways in which they can influence our own human behavior, one quickly begins to perceive the interconnectedness of life surrounding them all the more clearly.

Mushrooms spend the majority of their lives as a vast underground web-like structure referred to as mycelium. This mycelial network has been called the earth's central nervous system—its natural internet some say—due to the way in which information and resources (such as water and minerals) are exchanged and communicated through it in a methodic, rapid, and seemingly sentient manner. Adaptive, creative, and aware, the mycelial network interacts with its host environment as though keeping the health of the greater system in mind.



We are the Spore Liberation Front

We are the hidden network beneath the duff, fusing filaments of thought to create fruitbodies of change.

We are the filters of a diseased and radiated culture and the decomposers of its classist, spiritually stifled, and oppressive society.

We are the destroyers of already dead ideologies that attempt to destroy the right to life of present and future generations through a torrent of chemicals, wars, and fear spewing propaganda. And we are the creators of soil most fertile from which relentless synergies form, habits of mutual aid take over, and respect for all that lives persists and is never forgotten.

We reject the unforgivable levels of waste, abuse, and destruction taken against ourselves and this planet we all share. And we demand the ability to live our lives as we desire and to expand the limits of our consciousness should we so choose.

Our mycelium is our affinity groups and open collectives working synergistically toward the common goal of absolute freedom. The soil we grow through is the mass of underpaid employees and closet insurgents influenced and transformed through knowledge of our triumphs. Our spores are our dreams and aspirations. Thus, we broaden our mycelial network toward a day when every layer of soil is free to nourish whichever spores may seek their cradle.

We liberate spores. The spores that eject from our consciousness by the millions daily. Those that tell us to quit our jobs, learn a trade, seed a garden, to fall in love, to care. The spores that alone may not germinate beyond a few steps but, when combined with those like them and surrounded by soil awaiting a new force of life, have the potential to transform whole ecosystems.

These spores are ever-present in the soil. Microscopic, hidden, and unseen, yet everywhere. They may lie in wait for years until the right conditions call on them to arise. And even when the soil seems to be decaying, the ever-present hidden networks remain, growing and fusing to produce a continual mass, embedded in the soil, enriching the soil, purifying the soil, rebuilding it into something stronger, healthier, and much more powerful.

We, the Spore Liberation Front, reconnect with the Earth directly, with our hands in the dirt, repairing the devastation left by others. We work our hyphae to the limits, producing fairy rings on the outer edges of society to thrust our fists through the asphalt and concrete. We extend our mycelial networks across the globe, sharing resources and tactics, visions and actions. We take our lives back and stop at nothing to create the balance we need to survive. This process takes time. But, when living only to destroy and recreate worlds in an endless cycle of growth and change, time is all we have.

If we as radicals are to grow beyond the inhibiting, mediated, and sedated culture we currently struggle in, we must recognize the sacred mushrooms as potential allies in the search for a rethinking of social structures and a rebirthing of our lost bond with the natural world. We are not advocating for a dropout culture harking back to the salad days of Timothy Leary but, rather, to a new form of radical revolution. To a struggle geared toward the dismantling of hierarchy not just between members of our species but between ourselves and all of the Earth's inhabitants. Toward a transformation from this confused and destructive fight between haves and have-nots to an age of understanding, enlightenment, and respect for all that is.

We believe the sacred mushrooms can help us reach this goal. By allowing us to open ourselves to each other, to humble ourselves and strip off our egos to face the mysterious and infinite energy of the cosmos, mushrooms guide us toward a way of living more in tune with the world around us. By expanding our modes of thought, they help us envision new approaches to solving problems we and our world face and to seek new means to communicate and connect with each. And through the profound emotions typically elicited from their effects, we find powerful reaffirmations as to why we fight the dominator culture and why we cherish our lives and this beautiful planet so dearly.

The sacred fungi are there for us. To aid us in our struggles and to strengthen our wills. To teach us and to guide us beyond our destrucive ways. The sacred mushrooms have evolved for eons alongside humans, developing complex, perception-altering compounds that take us beyond the fleeting world we all die in and toward a plane of existence beyond the temporal, to a way of life more in concert with the universe. These compounds serve no defensive or metabolistic purpose for the mushrooms. They seem to exist solely for the purpose of eliciting these effects in mammals. This cannot be by chance. We encourage all who seek this knowledge and sense of attunement to take these entheogens if they so choose.

It is your mind. And your life. Live it how you may.

Toward An introduction

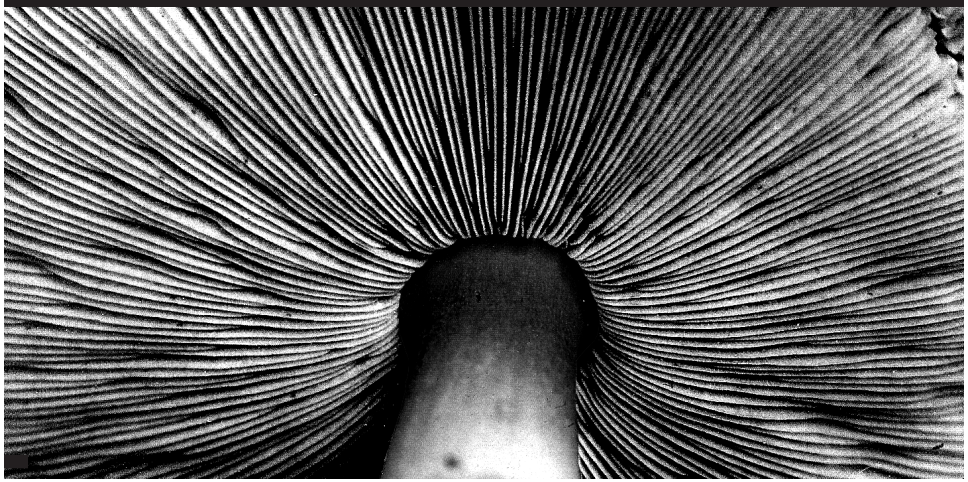
We, the members of the Spore Liberation Front, see the lifecycle of mushrooms, and especially this mycelial stage, as a metaphor for the way humans can choose to interact in and with Gaia, our one world. As an endless cycle of growth, decay, networking, sharing, and purification, this cycle is, for us, a process both beautiful and enchanting, complex and intriguing; more than the life giving destruction its job as decomposer appears to be.

Just as mushrooms use their abilities to share nutrients with plants and break down toxic chemicals to keep their microcosm cleaner and healthier, so can we as humans live committed to the health of our planet through our natural role as stewards and care takers of the land. Like the mushrooms--and their mycelium--that form from individual spores to flourish and co-exist with nature in harmony, so too can we choose to spend our existence interconnected with each other and the planet to grow and live better, fuller lives. Mushrooms teach us how to care for each other, how to see life as a perpetual cycle of interdependence, a fragile balance between give and take where not one species dominates but all rely on each other. And they help us reconnect with and accept an often denied and feared aspect of the wheel of life, that of death and decay.

Through hunting for and growing our own mushrooms, we learn the value of subsistence and living off the land, of subverting capitalist economic structures, of making our own medicines, and of connecting with the natural world. Using mushrooms for remediation purposes, we are able to reclaim land that has been stolen and destroyed by others that came before us. We are able to put our hands in the dirt directly, making a difference by healing the damages done so that all life may continue on stronger, healthier, and freer. For all these reasons and more we wrote this zine in the hope of sharing our love for fungi to you the reader; *to spread our spores*.

Our lives and our world can be so much better if only we begin looking to the greater fungi. Just how crucial mushrooms will be in saving our planet (and ourselves) from the brink of collapse will only be told in time. For now, we urge you the readers, our symbiotic allies and radical mycophiles at large, to put the information we present in these pages to work. For we truely believe that the coming revolution in human existance will be (in ways both literal and methaphoric) a mycelial one.

SLF
Spring, 2009
Cascadia, Earth



The Lifecycle

As the finer points of the complete mushroom life cycle can get as detailed as you like, we present this summary of the process for basic reference.

Spores don't have two "sexes" but, rather, up to 28,000 varieties of genetic possibilities. The millions of possible combinations thus allow for rapid adaptation and diversity.

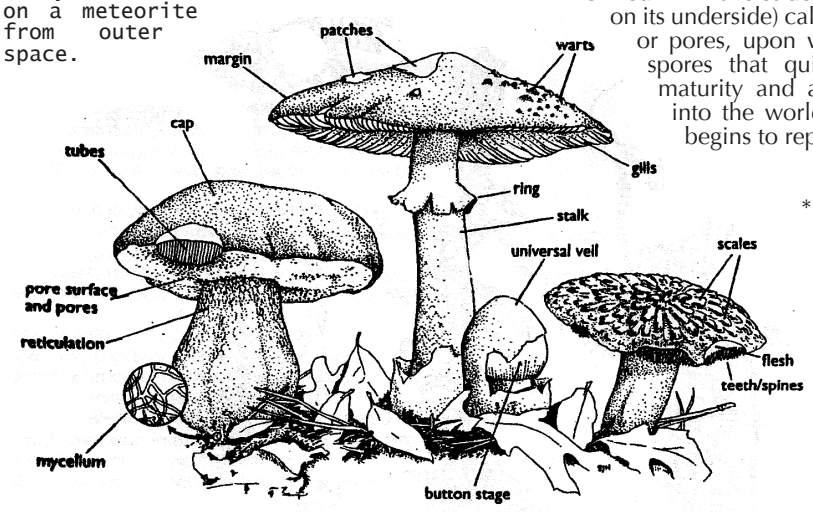
If optimum conditions for growth are not present, some fungal species create spores and/or hyphal masses (***sclerotia***) capable of remaining in a state of suspended animation for extended periods of time while waiting for the right conditions to arise. These spores or sclerotia can do this through a wide range of weather extremes and some can even survive the conditions of outer space. Because of this fact (and other supporting evidence), some theorize that mushroom spores may have originally come to Earth on a meteorite from outer space.

Fungi reproduce not by seed or egg but by a simpler—typically one-celled—spore. These spores are formed during the reproductive stage of the fungi's life cycle on its "***fruiting body****." This is the stage we are most familiar with, when a ***mushroom*** appears above ground. These spores grow on their parent mushroom and, when mature, get ejected from the mushroom by tiny pockets of gas at a speed of 25,000 Gs(!). In some species, like Morels, this act can not only be seen as a tiny brown puff of smoke but can also be heard as what has been described as a thousand tiny aerosol cans going off. A single mushroom may release billions of spores a day (some species up to 5 trillion a year!), yet only a tiny percentage of these will land in an environment suitable for germination and growth.

Those spores that do get lucky soon burst to life growing through their new home as a microscopic filament of successively arranged cells called a ***hypha***. Having only half the genetic information it needs to reproduce, these hyphae grow and branch in all directions seeking a genetic "mate." Once found, the two physically combine and grow as one, branching through their ***substrate*** in search of nutrients and water.

The web-like structure thus formed is now referred to as ***mycelium***. As it grows during this below-ground stage, the entire surface of the mycelium encounters organic matter that it then breaks down and consumes through the use of special ***enzymes*** it excretes. Based on this fact, fungi are considered more similar to animals than they are to plants because they consume their food rather than make it through photosynthesis. The difference, though, is that instead of *ingesting then digesting* their food like animals, mushrooms *digest then ingest* their substrates.

Over time, the mycelial network builds up food reserves until certain environmental conditions arise that trigger the production of a mushroom above ground. The mushroom thus formed will have structures (typically on its underside) called gills, teeth, or pores, upon which develop spores that quickly grow to maturity and are discharged into the world as the cycle begins to repeat itself.



* - See the glossary on page 35 for definitions.

Even Christianity seems to have been based in part on the use of sacred fungi. In particular, the use of the Amanita Muscaria, or Fly Agaric mushroom, may very well have played some role in the myth and symbol formation of ancient Chritianity. The excellent, if a bit dry, documentary The Pharmacratic Inquisition (available for free at gnosticmedia.com and video.google.com) breaks down this relationship in depth.

In most cases, psychedelic mushrooms are not harmful to humans. When psilocybin is ingested, it is broken down to produce psilocin, which is responsible for the hallucinogenic effects. A common misconception is that the effects experienced from psilocybin/psilocin are due to a poisonous nature of the compound, yet the National Institute for Occupational Safety and Health, a branch of the Center for Disease Control (CDC), rates psilocybin less toxic than aspirin. Psilocybin is non-addictive, non-habit forming, and rapidly develops a high tolerance in the user over the short term, decreasing the likelihood of a shroom "binger." There has never been any medical documentation justifying the illegal status of the psilocybin mushrooms in the US. They were outlawed in the 60s (when they first became popular by young radicals) in a blatent attempt by the government to put a halt on the psychedelic revolution started a few years prior by LSD.

The history of psilocybin mushrooms being used to aid in the curing of psychological disorders has been well documented. Several studies have been made linking the use of psychedelic mushrooms to the complete remission of both obsessive-compulsive disorders (OCD) and OCD-related clinical depression for up to months at a time. This natural medicine is often found to be more effective and less toxic than the prescription pharmaceuticals typically prescribed for these disorders.

Despite all this history and indisputable research, western society still clings to a fear of the sacred fungi*. A fear that stems from oppressive moral ideologies based on antiquated religious dogma that denounce these sacred ***entheogens*** as "sinful" and wrong. Indeed, just as free-thinking women during the middle ages were killed not because of their "witchcraft" practices (that they [mostly] did not engage in) but for the threat they presented to the oppressive Christian patriarchy, so too have "magic mushrooms" been condemned not for their addictive or dangerous potentials (which do not exist) but for the threat they present to the dominator culture. The sacred fungi are a natural, non-toxic substance that, when consumed, almost forces one to connect with the natural world and *feel* the interconnectedness of life. Such an emotion naturally calls one to question the effects our destructive lifestyles and greedy leaders inflict upon this frail planet. Such thinking concerns those in power. For the soon-to-be-enlightened may very well resist their tyranny or, at the least, stop supporting a society founded on fear, war, and pillage.

Further, by allowing one to transcend the temporal limits of ego and society to seek the spirit and god(dess) within ourselves, these mushrooms threaten the organized religions that hold a monopoly on the divine. Religions that seek to shackle the minds and enslave the souls of humans striving to simply fulfill their natural drive to connect with the greater sacred. The use of magic mushrooms to find one's own spritual path toward higher knowledge is not a thing of imagination nor an excuse to "trip." If one sincerly consumes an adequate dose of psilocybin in a relaxed and receptive state (as opposed to a party setting), they will likely have a deeply spiritual experience.

* - And, really, all fungi

The Sacred Mushrooms

Below is a working list of all known Psilocbin containing mushrooms found in the 3 west coast states. However, it is illegal to pick them. Happy Hunting!

Northern California

Psilocybe azurescens
Psilocybe cyanescens
Psilocybe pelliculosa
Psilocybe semilanceata
Gymnopilus aeruginosus
Gymnopilus luteofolius

Oregon

Psilocybe baeocystis
Psilocybe cyanafibrillosa
Psilocybe cyanescens
Psilocybe fimetaria
Psilocybe liniformans var. americana
Psilocybe pelliculosa
Psilocybe semilanceata
Psilocybe silvatica
Psilocybe strictipes
Psilocybe stuntzii
Psilocybe subfimetaria
Panaeolus subbalteatus

Washington

Same as Oregon plus:
Conocybe cyanopus
Conocybe smithii watling
Gymnopilus aeruginosus
Gymnopilus viridans

An average dose of psilocybes is approximately 1 to 2 grams dried mushroom (containing roughly 10-25mg psilocybin) while about 2.5-5 grams dried caps and stems (25-50mg psilocybin) is considered a heavy dose. The effects of these mushrooms can take 20 minutes to 3 hours to take effect and can typically last anywhere from 3-7 hours depending on dosage, preparation method and personal metabolism.

In 2006 at Johns Hopkins University, the U.S. government funded a randomized and double-blinded study to test the spiritual effects of psilocybin-containing mushrooms on humans. The study involved 36 college-educated adults, with an average age of 46, who had never tried psilocybin nor had a history of drug use. The participants were closely observed while under the influence of the psychoactive mushrooms for 8 hours.

Upon completion, one-third of the participants reported that the psychedelic experience brought on by the mushrooms was the single most spiritually significant event of their lives. More than two-thirds reported it was among their top five such experiences. Two months after the study, 79 percent of the participants reported increased well being and general satisfaction...

With results such as these, it should come as no surprice that the psilocybin-containing (a.k.a. "magic") mushrooms have been a significant and influential part of human history for thousands of years. One of the earlist known statements to this fact dates to at least 5,000 B.C. when cave paintings on the Tassili plateau of Northern Algeria were made depicting mushroom-ed humanoids. In one of these images, mushrooms with electrified auras are shown growing out of a dancing shaman.

Author Terence Mckenna theorizes that psilocybin mushrooms may have been the catalyst for our evolution as a species. He posits that their effects on our brain's pineal gland may have helped in our development of spoken language and cognition capabilities and aided in our steps out of the jungles and into the grass plains of Africa.

As interesting as these points may be, studies of the sacraments of ancient cultures show that this use of the pschedelics has not been restricted to indigenous tribes. In ancient cultures around the globe, one finds that the use of psychedelic mushrooms among humans for religious communion, divination, and healing has been accepted and revered for millenia. From the ancient mushroom stones and motifs found in Mayan temples, to the Soma of the Hindu Vedic texts, to the fungal drink of the Eleusinian Mysteris—an ancient Greek religious ceremony attended by Aristotle, Plato, and Sophocles—the use of psychedelic mushrooms stand out with their influential role in the formation of human cultures. The extent to which their use shaped the thinking of ancient philosophers and artists can only be guessed at but the knowledge of their power by such people cannot be denied.

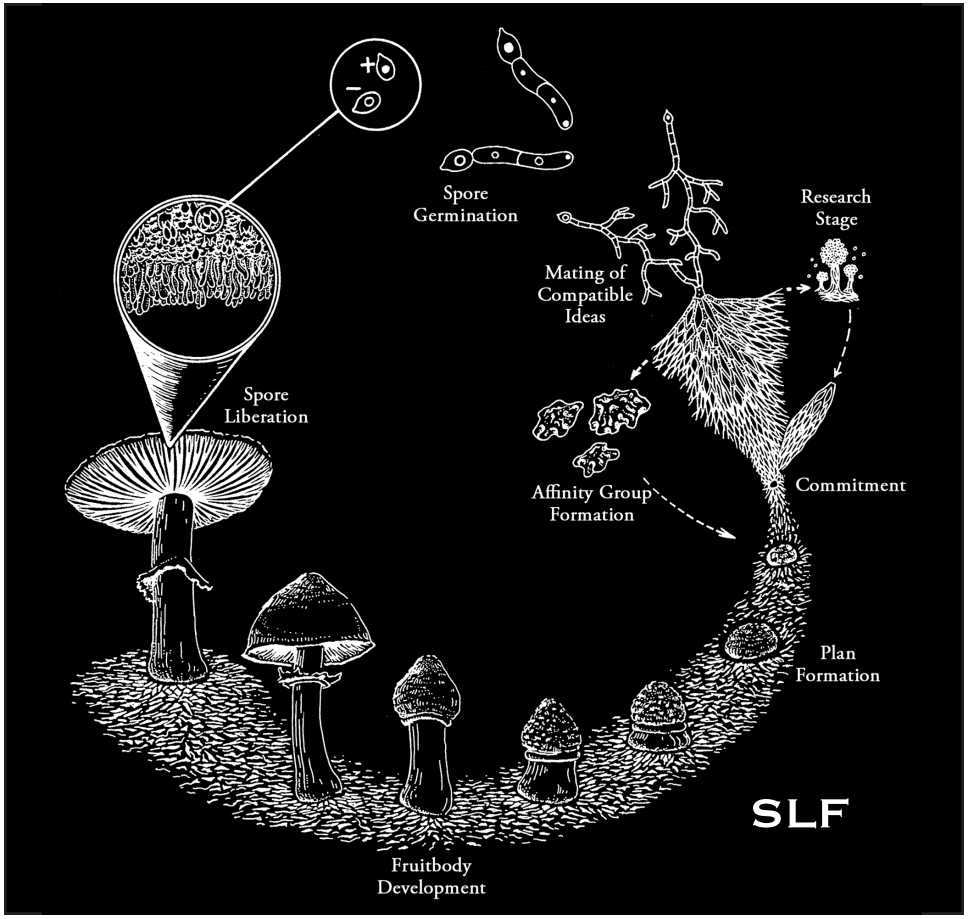
Its Implications

We percieve this lifecycle as a metaphor for the way humans and, more specifically, radicals, can choose to view our interactions with each other. We see our spores as the ideas we have every minute of our lives: those of a better world and freer existence. And while many of our spores, just like those of our fungal allies, do not immediately find a solid footing and lay to wait, at times a select few hold on to eventually find space to thrive.

Over time, our spores encounter ideas flowing from like-minded allies and, if found compatible, the two inevitably combine with infinite variety toward the common goal of survival. In this way, we see our networks of mutual aid and grassroots organizing form an organic web through our communities just as mycorrhizal fungi share nutrients and knowledge across the forest. Slowly, resources are pooled as information is gathered and shared--acts hidden underground from the mainstream--until the point that the culmination of all the previous toil leads to a final direct action: the projection of a fruiting body.

As this fruiting body thrusts forward with strength and determination, the now unsettled ground reflects the change that has occured. The time spent building and working, we now see, wasn't for nothing. Action has happened where it could not be stopped.

And as the fruiting body dies back and the immediacy resolves, it sends out spores all over the world to influence, inspire, and grow where they can; to continue the cycle of resistance in the face of oppressive forces.



Types Of Fungi

If there is an equal amount of substrate, mycelium will grow in all directions, periodically producing a circle, or "fairy ring", of mushrooms above ground. By averaging their rate of growth, some rings are estimated to be over 600 years old. Legend states that they appear where fairies have danced and that anyone who dares stepping inside the circle risks being taken by the little people.

The oldest known mushroom found in amber has been dated to over 90 million years old.

Mycologist Tom Volk theorizes that millions of years ago trees developed cellulose and lignin to protect themselves against the fungi that were consuming them. As time progressed, mushrooms evolved so that they can now decompose these components. But all the vegetation that died in the interim just piled up, got compressed, and after millions of years became fossil fuels. This is why the earth will never produce oil or fossil fuels again: because mushrooms will, forever on, decompose living matter.

Virtually all of the mushrooms we see are either ***ascomycetes*** or ***basidiomycetes*** and are typically divided into one of the four categories below based on their substrate or role. There are many other classes of fungi (zygomycetes, glomeromycetes, deuteromycetes and chytridomycetes) which do not produce mushrooms, but play vital ecological roles as well.

Saprophytic mushrooms break down organic matter as their main role in nature. They are nature's recyclers, the soil's replenishers, vital to the health of forests. If saprophytic mushrooms (and the bacteria that help them) didn't decompose organic matter, the world would literally be piled high in dead trees.

As a byproduct of this decomposition, saprophytes produce nutrient rich soil. And, of course, as plants use this enriched soil to grow and, in turn, feed the animals, one can see that, in a very real sense, fungi are at a very fundamental level in the cycle of life. They are life-givers as well as destroyers.

Necrotrophic ("Parasitic") mushrooms, a minority, feed on living organisms, sometimes destroying and eventually killing them. Once seen as hostile to the long-term health of forests, parasitic mushrooms are now being recognized as actually beneficial. They often increase the diversity of plant communities by making changes in plant composition and succession in a given forest. And they are also responsible for creating hollow logs which provide homes for wildlife.

Mycorrhizal mushrooms encompass two sub-categories of mushrooms, both of which form a symbiotic relationship with plant roots (myco=fungus, rhiza=root). In *ecto*mycorrhizae, the fugal mycelium forms a sheath over the plant's roots but does not penetrate them. With arbuscular mycorrhizae (or *endo*mycorrhizal species), the mycelium forms a sheath over the plant's roots and goes deeper to actually penetrate not only the root's exterior but the root's cell walls as well.

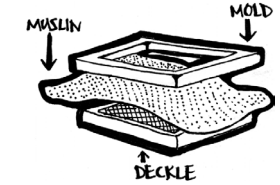
In either situation, the fugus and plant work together in a mutually beneficial relationship sharing nutrients, water and unknown levels of information. This relationship has been shown to exist among many plants--from the forest to the desert to the tundra--and likely exists among all plants.

Indeed, many plants will grow less vigorously without their fungal partner while others won't grow at all. Some mycorrhizal mushrooms are plant/tree specific. Learning to identify these trees/plants not only helps you to learn more about the natural world but also aids in the location and identification of these fungal friends. Mushroom/plant relationships have also been successfully employed in gardens to significantly increase fruit and vegetable sizes and yields. Other experiments have shown that, when paired with two different trees, mycorrhizal mushrooms will channel sugars from one tree to the other if the second were to become shaded out and unable to photosynthesize! We cover mycorrhizal mushrooms more in the mycorestoration section (pg. 23).

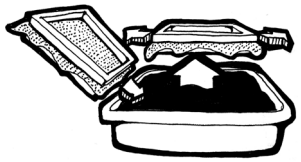
Endophytic mushrooms, a controversial category, are similar to mycorrhizal mushrooms but are less understood. The majority seems to have lost the ability to produce spores and spend their entire existence in a continuous mycelial state.

SUPPLIES

- Woody shelf fungus
  - Artist's Conk
  - Turkey Tails
  - Red-Belted Polypore
- Blender or food processor (preferably industrial strength)
- Knife
- Shallow tub or basin
- Paper making "mold & deckle"
- Pieces of muslin slightly bigger than mold & deckle
- Sheets of newspaper
- Rolling pin



7. Place muslin between mold and deckle and put the sandwich into the mixture in an angled sorta scooping motion and lift it up, letting the excess water run off. Moving the screen side to side in the water may help disperse it more evenly. See those little chunks? Don't you wish you'd ground it longer now?



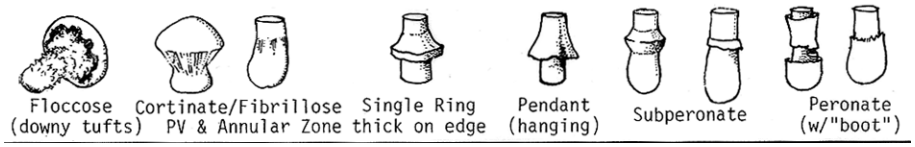
8. Remove the top part of the form (the "mold") to reveal your sheet of paper. Invert the deckle and muslin carefully onto newspaper.

9. Run a rolling pin across the backside of the muslin to flatten the paper to remove extra moisture.

10. Remove the piece of muslin from the paper carefully.

11. Lay the sheet between several layers of newspaper and let it dry. Continue to dry by replacing newspapers and covering cloths. Ironing gently over a cover cloth can speed up this process. When dry enough to be easily handled, hang to dry or, if you want very flat paper, put it under weights.

12. Make stuff with it. Try adding spores from spore prints to ink and writing with the mixture.



Mushroom Paper

An alternative to clearcut or tree plantation-made paper, mushroom paper is an easy, fun way to create beautiful, useful and surprisingly durable paper.

PAPER MAKING STEP-BY-STEP

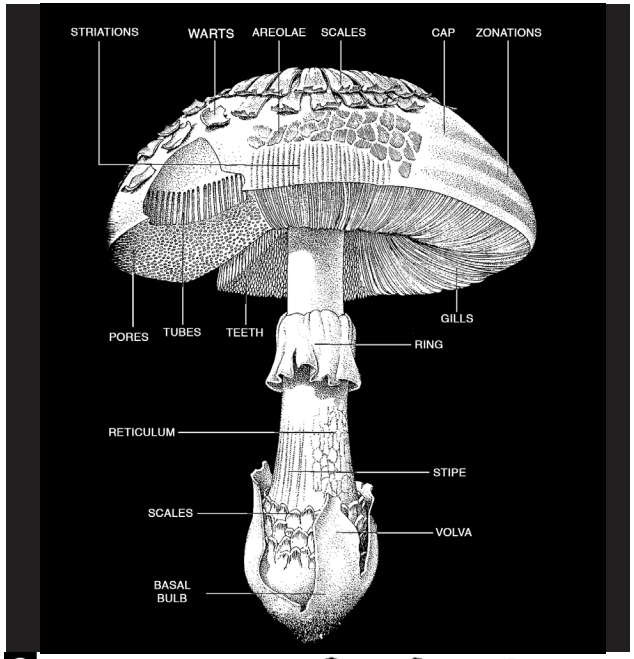
1. Tenderize the mushroom with a sledgehammer (10-20 good smacks).
2. Soak it in water for a while (hours or days).
3. Smack some more then soak some more for a few hours or days (Optional, but helps).
4. Remove mushroom(s) and chop them into small pieces.
5. Put chunks into blender with water and grind to create a pulp. Once close to a smoothish consistency, grind a lot longer til **all** the chunks are gone. This may take a while. (Don't burn out the motor! Stronger/more expensive blenders work better).
6. Pour the pulp into a shallow tray and add water. The more water you add, the more dispersed the fibers will be and the thinner your final paper will be. Experiment to find what works best for you.

Wild Identification

Learning to identify mushrooms can at first seem like a giant pain in the ass time killer. With an estimated 1.5 million species in the world, it's damn hard to know where to start. But really, learning to spot the more common mushrooms in your area is actually pretty easy. And once you get the basics, you'll find yourself becoming more comfortable with--and looking forward to--learning more species.

In almost all areas of the world there are mushrooms growing. Different mushrooms grow in different environments and on different surfaces, so even if you don't have a majestic old growth Douglas-Fir forest around the corner, chances are you can find some sort of mushroom growing in your local greenway, park, ravine, or landscaped yard. You just have to get out and look. And if you don't find anything the first time, come back later in the season. And if you still don't find anything, you had a great time out of the house/shed/attic with your friends getting dirty and exploring, right?

Of course, you might also come across mushrooms when you least expect it. Now, you should try to ID the mushrooms as soon as possible, but you probably won't have a guidebook with you. At these times it's a good idea to take thorough notes to refer to when you get back home. Note taking not only helps in later identification but it also makes one learn how to look critically at mushrooms. Even though it's tedious, try it a few times. Hell, some people like mushroom hunting just for the identification aspect.



IDEAS FOR NOTES:

- Date
- Location
- Weather
- Abundance
- Growth habit (solitary, scattered clustered, in rings)
- Substrate
- Vegetation growing within 50 ft (tree roots hosting mycor rhizal mushrooms can grow at least that far)

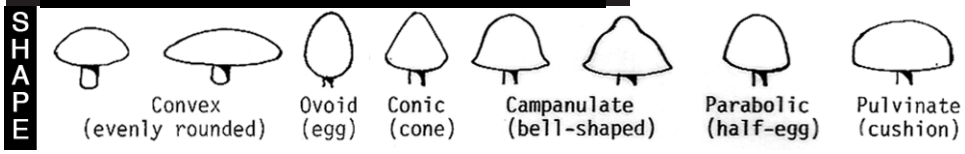
If it's growing on wood:

- Wood's stage of decomposition
- Type of wood (hard wood or conifer)
- Tree species

If growing on the ground:

- Type of ground (disturbed, compact ed, sandy, charred)

As many of the more desireable mushrooms have relatively distinct appearances, ignore the Little Brown Mushrooms (LBMs) when starting the identification process. These are the ones with brown cap, stalk, and gills. There are so many it can be very frustrating to try and identify them when starting out.



Notes / Tips

For some mushrooms, you may need to get a look at the spore color to ID it. To do this, take a **SPORE PRINT** by cutting off the mushroom's cap and placing it on white paper or glass. Let it sit there for 2-6 hours as the spores drop. Put a bowl over it if you want. Then pick the cap up and enjoy your fungal art. If it was made on glass, you can place another piece of glass over it and seal the edges with tape. The print then remains viable for years at room temperature, safe from outside contamination and destructive UV light.

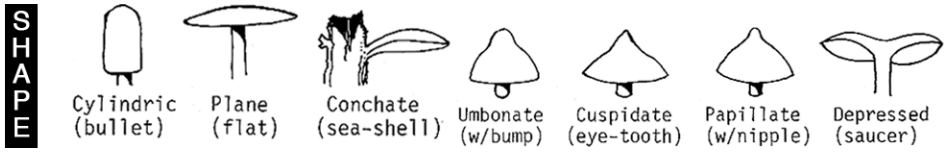
Some thoughts, some ethics..

• **ALWAYS DOUBLE ID CHECK!** We can not stress this enough. Always double check descriptions and cross-reference multiple identification books. Go on your first few hunts with an experienced friend and have them help with ID checks. And if you're unsure, use a real key, like those from the PNW key council (website in the back of this zine) not just those in your book. And don't assume if two mushrooms are growing near each other that they are the same species. For example, certain types of Psilocybe mushrooms can grow so close to nearly identical, and deadly, Galerina species that the two touch! The only difference between the two in this case is their spore colors, an easy thing to miss if one is being too hasty.

• There is, to a certain degree, some debate as to what can be considered greedy when hunting wild mushrooms. Considerations should always be made to a species' need to perpetuate itself. We recommend not picking a field of mushrooms that have yet to open their caps and drop their spores. Leaving some for the next person (or critter) to enjoy should be weighed against the possibility that someone won't come along before the mushroom begins to rot. Also, consider the risk of over-harvesting, which does occur. In Germany, for instance, the Chanterelle is on the endangered species list and in Italy you need to have a permit to pick them becasue of over-harvesting problems. In the US, the problem does not seem as severe in most places. Still, respect for nature's balance and a fair judgment of one's own needs should always be in mind. This is an opportunity to become closer to the balance of life and see how one's interaction with the natural world can cause effect.

• Don't just pick every mushroom you see. Stick to the ones you know or try to add a few new species at a time. Blindly picking often leads to a giant dirty pile of wetness that nobody is going to want to sort through, clean, and then identify. This soon leads to a slightly smaller pile of rotting mushrooms, some of which could have been eaten.

• If you do find a nice big patch of mushrooms, write down and remember the spot. Well-established plots typically produce yearly like clockwork. Reliable hunting grounds like these are coveted by mycophiles; one's best spots often being well guarded secrets.



Mushroom Dyes

Just as plants provide many natural dyes for clothing and hair, so too do some mushrooms. Techniques of this use of mushrooms date back to at least biblical times but have had a resurgence in the last few decades, especially in the scandanavian countries. The process for making these fabric and hair mycodyes turns out to be fairly simple.

If using fabric, you will likely want to prep it with a "mordant," a metallic salt used to aid in the setting of a dye to make it lightfast and colorfast. Different mordants produce different colors when combined with the various mushrooms but we recommend sticking with either *potassium alum* or *iron sulfate* mordants as they are the least toxic for both you and the environment.

One recipe for an alum mordant bath sufficient to dye 2-3 kgs of yarn consists of 12 grams alum, 4 grams tartaric acid. Place fabric in bath and simmer for about an hour. When the fiber is immersed in the hot mordant bath, the metallic salts bond directly to the strands of fiber. When the mordanted fiber is later put into a dye bath, the pigment molecules form a chemical bond with the mordant on the fiber, thereby setting the color. You can reuse old mordant bath batches by adding 1/2 the quantity of mordant (i.e. 6 grams alum, 2 grams tartaric acid). This step of prepping your fabric is entirely optional..experiment!

Recommended dye fungi and associated colors with mordants:

Boletopsis grisea
Green / Olive

Cortinarius semisanguineus
Alum: Orange and Red

Dermocybe phoeniceus var. occidentalis
None: Pink
Alum: Rose
Iron: Maroon

Omphalotus olivescens
None: Lavender
Alum: Purple
Iron: Dark Forest Green

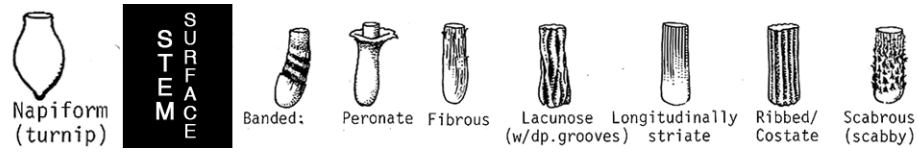
Paxillus atrotomentosus

Phaeolus schweinitzii
None: Light Yellow
Alum: Gold
Iron: Burnt Sienna

Pisolithus tinctorius
Browns and Gold

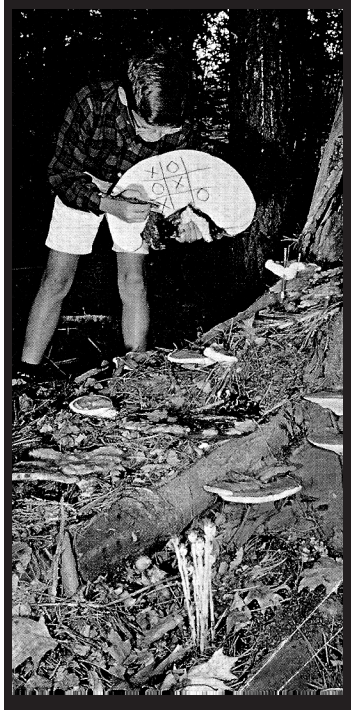
FABRIC DYEING STEP-BY-STEP

1. Cut mushrooms into small pieces, soak them in water (enough to submerge your fabric), heat, and simmer for a few hours.
2. Cool dye bath for a short time (this prevents felting of the yarn). Strain and discard mushroom chunks (or use them for papermaking!).
3. Place pre-mordanted yarn (described above) into the dye bath solution and return to heat.
4. Reheat to about 175-195˚F (80-90˚C) and simmer for a few hours until desired depth of color is reached.
5. Cool dyebath before removing the yarn.
6. Wash yarn with gentle soap and water then dry.
7. Store non-dyed "mordanted" yarn wet in plastic bags. This pre-mordanted yarn will keep for 6-8 days.



Ethnomycology

The story of Santa Claus may have come from tales of reindeer herding tribes in northern Siberia. These tribes held ceremonies in honor of the famous–and supposedly hallucinogenic to the right person–red and white *Amanita Muscaria* (a.k.a. Fly Agaric) mushroom. The magical compounds found in these mushrooms remains in the urine of the user after ingestion and during these ceremonies the Siberian shamen would dress in red and white and ritualistically distribute their Amanita laden urine to other tribe members.



Apart from food and medicine, human uses for mushrooms have extended to all aspects of life. These are just a few interesting facts we've discovered.

• In 1991, Otzi, a 5,300 year old man frozen in ice, was discovered in the Alps on the border of Austria and Italy. On him was the Tinder Polypore (*Fomes fomentarius*) which, when dried, makes excellent punk for starting fires and for carrying embers over long distances. The Tinder Polypore has also been used for..
- Cauterization by Hippocrates in 5th century BC)
- Remedy against dysmenorrhea, hemorrhoids, and bladder disorders in Europe
- Diuretic, laxative and nerve tonic
- Treating cancers of the esophagus, stomach and uterus in China
- Smoking rituals in west Sibera by burning the fruit bodies overnight to banish evil spirits
- As snuff or mixed with tobacco

• Bracket fungi, with their strong hyphae, have been used to sharpen the edges of weapons and tools. The smoke of other polypores (such as Turkey Tails) is excellent for deterring insects. Supposedly, some polypores can even be soaked and pounded into a mass that can be woven into garments, a tradition still alive today in Eastern Europe (we haven't found any information on how this is actually done but it sounds cool).

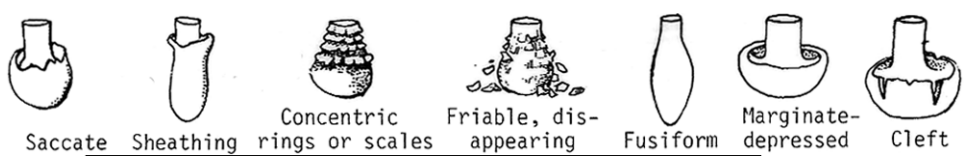
• When you scratch the white pores on the underside of the Artist's Conk (*Ganoderma applanatum*), the pores rub away and expose the brown hyphae underneath to create a drawing of whatever is scratched into it.

• The Nlaka'pamux tribe of Cascadia used the juices of *Tricholoma populinum* as a wash for newborns to give them strength and independence like a mushroom. The Japanese used the sames juices to combat wrinkles.

• Haida tribes used the spores of Puffballs (*Lycoperdon spp.*) as a hemostatic. Other tribes rubbed the spores on the navals of infants to prevent bed wetting.

• The Quileute use the position of shelf fungus on trees to aid in orientation when returning from a walk.

• The ash of *Phellinus igniarius* was mixed with tobacco and smoked by the Micmac, Inuit, and Blackfoot. Its high pH helps boost the tobacco's effect on the body.



• Clean and/or brush the mushroom off before putting it in your container. This helps in the final cleaning back home. Also, keep different species separated with wax paper, or paper bags (no plastic, which accelerates decomposition) so as not to cross contaminate prior to identification.

• If, like Chanterelles, the mushroom is growing in pairs, cut and take only one so the other may grow to maturity. Try to cut all mushrooms at their base, leaving the stem butt intact. If you must dig up the mushroom to aid in identification, be sure to refill the hole with duff. These practices have been shown to maintain the health of colonies and ensure future yields.

• Lastly, you may consider learning the scientific names of mushrooms. Yeah, they may seem stupid and boring but they aren't pointless. Many mushroom species have no common name (or multiple common names) and the scientific name may only way to refer to a certain species. Some are also really fun to say, like *Phlogiotis helvelloides* (the Apricot Jelly Mushroom). Similarly, learning some of the vocab words used to describe physical characteristics will help a long way (check the descriptors we have running along the bottom of these pages).

TIPS FROM **FERAL FORAGER:**

• Meticulously scan the forest floor, keeping in mind that some of the choicest quarry is also the best camouflaged. Forsake no possible terrestrial hiding places; but scour the piles of last autumn's fallen leaves, and examine the carpets of green moss. Inspect the upturned roots of wind fallen trees, and observe the rotting logs, for some wonderful delights may be hiding anywhere.

• Walk not erect, nor in a straight line, but, rather, stay low and wander aimlessly and in circles. Remember perspective is everything, and what cannot be seen from here must be seen from there. Steal glances above too, into the trees and at their trunks; for often the object of your quest will be hiding there, counting on your eyes to be too earthbound to spot it in its arboreal sanctuary.

• Look, look again, look even once more, and, finally, look again, never counting how many times, for it is the rule of the mushroom hunt that they who have not found any mushrooms have not looked closely enough, nor long enough, nor at enough places, nor from enough different angles.

STUFF TO TAKE WITH YOU

On Your Body

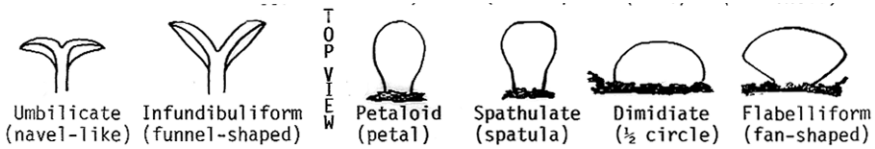
__ Polyester or wool clothes (bright colors in hunting season)
__ Rain jacket & pants
__ Gators
__ Sturdy moisture proof boots
__ Hat
__ Mittens/gloves
__ Wristwatch
__ Compass
__ Whistle
__ FRS walkie-talkie radios (Different from CB radios and MUCH better in all respects.)
__ GPS

In Your Flat- Bottomed Basket

__ Waxed paper bags (no plastic!)
__ Knife, brightly marked
__ Brown paper bags
__ Trowel with brush

In Your Backpack

__ Good map of the area
__ Food & water
__ Extra clothes
__ Sunscreen
__ Insect repellent
__ Trowel and toilet paper
__ Field guides
__ Notebook & pencil
__ Spore print paper (black and white)
__ Photography equipment
__ Emergency blanket
__ First Aid Kit
__ Waterproof matches or lighter



Field Guides

The following is just a tiny selection of the bounty that awaits in your nearest woodland or yard. We strongly recommend cross-referencing our descriptions and crappy black & white photos with other sources (check the recommended reading section in the back) or with an experienced friend. In fact, **ALWAYS DOUBLE CHECK YOUR IDENTIFICATIONS**! Even the pros do it. You can never be too safe. Seriously. And make sure to check *all* the characteristics as some species have non-edible look alikes. That said, the following shroomies have relatively distinct appearances. These all grow here in the SLF's home base of Cascadia but not necessarily in all parts of the world. So check other resources to find what's local for you.

A NOTE ON POISONOUS AND DEADLY MUSHROOMS

Yes, there are deadly mushrooms out there. In the US, about 5. And many more will make you sick or give you a strong hurtin in the gut. But the poisoning stats aren't that bad. In North America, there are an average of 70 mushroom poisonings and one death per year. 90% of thse occur in California, due in large part to the abundance of the Death Cap Mushroom, *Amanita phalloides* (see below). Often, these poisonings occur due to human error in identifying a mushroom. If you stick to your guidebooks and cross-check the descriptions, it's very unlikely you will get sick from eating mushrooms. Thus, it's a good idea to learn the more posionous mushrooms first and know how to avoid them, just like when learning to identify plants. Remember: **WHEN IN DOUBT, CHUCK IT OUT** (or compost it).

DEATH CAP

Amanita phalloides

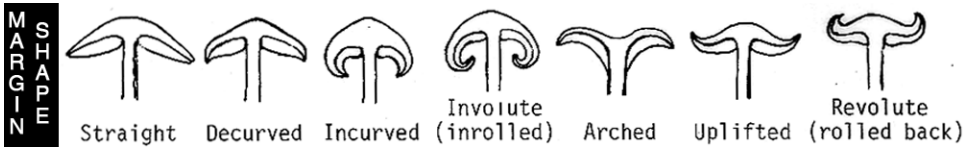
POISONOUS! DO NOT EAT!

Appearance:

CAP - 3.5-15 cm broad. Sticky when moist. Smooth olive, green-yellow, yellow-brown, or bronze. Margin rarely striate. Veil remnants often present on top.
GILLS – White becoming cream. Adnate to adnexed or free. Covered by thin white universal veil when young.
STALK - 4-18 cm long, 1-3 cm thick. White to pale yellowish. Sometimes bulbous at base. Skirt-like annulus ring often present. White sac-like volva at base.
SPORE COLOR - White
FLESH – White. Firm, not bruising.
ODOR - Slightly pungent but variable. Taste mild.

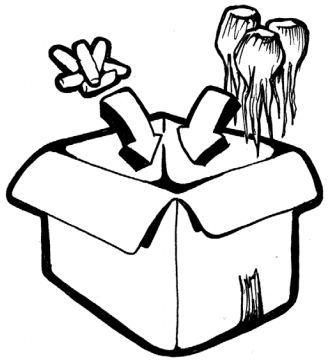
Growing Pattern:
Mycorrhizal, found with Oak, Hazelnut and Cottonwood trees. Often found in cities.

Notes:
Responsible for 45% of mushroom poisonings in North America, *A. phalloides* is an important mushroom for beginners to learn. This European "invasive species" has many poisonous *and* edible look-alikes.



METHOD 5

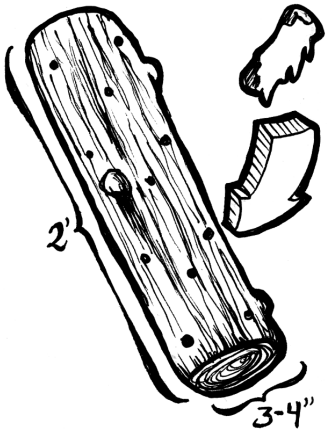
1. Soak 1″ long wood dowels for several days, drain them, then dump in a cardboard box with a few stem butts mixed in.



2. Cover with soaked corrugated cardboard sheets.

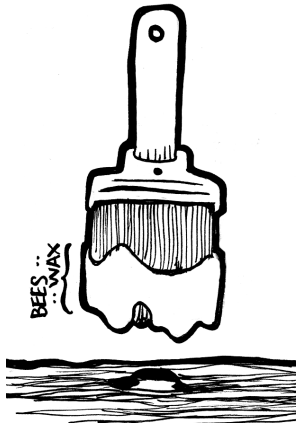
3. Leave outside, stirring the box up after 6 months.

4. Once the dowels are well covered with mycelium they can be harvested and placed into holes drilled into 2′ x 4″ logs and then covered with bees wax.

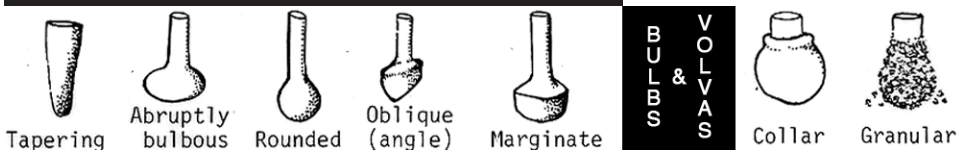


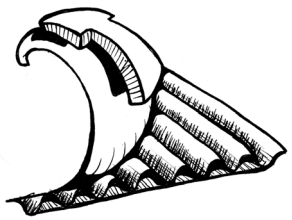
5. The preferred wood would have been felled in the fall or winter (after the leaves have fallen and all the sugars are concentrated in the wood), between 3 weeks to 3 months prior to use. Hardwoods and broadleaf tree (such as alders, oaks, and maples) are typically preferred over most coniferous species.

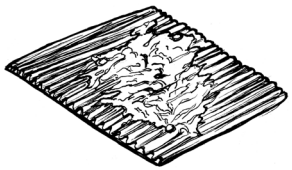
6. Kept moist and shaded, these logs will produce mushrooms in months (up to 16, depending on the specie) and will continue to do so for years.



7. Whatever ***spawn*** you grow can be mixed with untreated moist wood chips in burlap sacks to create "bunker spawn". These sacks can be used in mycofiltration projects by being completely submerged in the contaminated flowing water. Or they may be placed along logging roads to prevent erosion.







METHOD 3

An easy way to clone a mushroom you find in the woods is by directly taking a piece of its mycelium from the ground and providing an environment for it to flourish at your home. It goes like this..

1. If you find a patch of mycelium in the woods collect a strong ropey chunk of it or take a fresh mushroom and cut off the bottom of the stem including the ropey rhizomorphs (called the "stem butt"). More is better.

2. Place the stem butts in a moistened paper bag.

3. At home, flatten a corrugated cardboard box from the USA or Canada (boxes from other countries may have toxins in their glue) and strip one side to reveal the corrugations.

4. Wet the cardboard until it is saturated and place the mycelium on the corrugated side.

5. Cover with straw.

6. Once 25-50% of the cardboard is covered with mycelium it can be moved to a bed of fresh, moist wood chips, or placed between two burlap sacks full of moist wood chips or between more moist cardboard sheets. The mycelium will continue to grow as long as more substrate is introduced.

METHOD 4

1. Soak cardboard until saturated & expose corrugations.

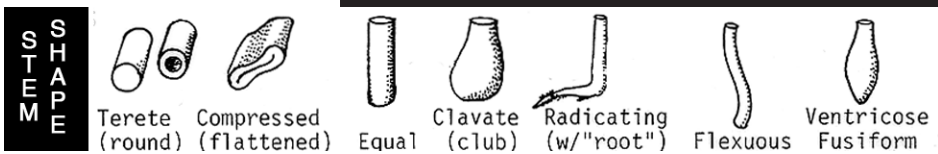
2. Place one stem butt from every 16 inches.

3. Sandwich with another panel of corrugation.

4. Soak stem butts and cardboard in water. Drain.

5. Place in a container on the ground, covering with a thin wood chip layer.

6. Incubate for 4-8 months before transplanting.



SULFUR TUFT

Naematoloma/Hypholoma fasciculare

Appearance:

CAP – Highly variable. Small to medium, domed to flat with age. Yellow-orange, yellow, or green-yellow. Bald, often with brown spot on top. Fleshy. Sometimes carrying small partial veil remnants. 2-5cm broad.

GILLS - Yellow or green-yellow when young, graying with age. Adnexed and crowded.

STALK - Slender, yellow or tawny. 5-12cm long.

SPORE COLOR – Deep brownish purple.

FLESH - Thin and yellow.

ODOR - Faint "distinctive" odor.

Growing Pattern:

In tufts or clusters on rotten wood. On stumps or buried roots of conifers and broadleaf species.

Growing Season:

Spring to first frosts.

Edibility:

Poisonous! DO NOT EAT!

Notes:

The Sulfur Tuft is a common non-edible that some may mistake for the edible Honey mushroom if they didn't read the descriptions for both closely. Name from Latin, meaning "in small bundles." Distinguished from *Hypholoma capnoides* by its greenish gills and a fiercely bitter flavor. Can be used to make mycodyes.

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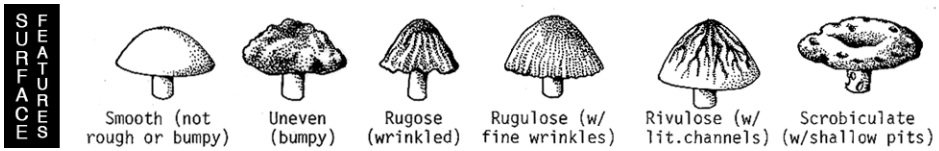


HONEY MUSHROOM

Armillaria spp.

Appearance:

CAP - Medium to large, 3-15 cm. Fleshy. Varying between shades of yellow, brown, light pink and white. May be covered in erect brown hairs spreading toward edge.

GILLS - The gills are slightly sinuate, decurrent or adnexed; close to subdistant. Cream-colored, brownish in age.

STALK – Fleshy to fibrous and stringy. Cortina (cobwebby veil) present, forming ring. Typically white with reddish or brownish tints. Club-shaped.

SPORE COLOR - White, dusting caps beneath.

ODOR - Oily.

RHIZOMORPHS – Dark-colored, shoe-string-like.

Growing Pattern:

Widespread and abundant in clumps on many types of both live and dead trees, logs, and stumps.

Growing Season:

Summer & autumn.

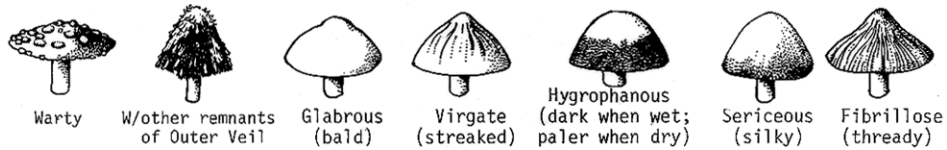
Edibility:

Cook well (parboiling recommended). Good for drying.

Notes:

Honey Mushrooms comprise several similar species and are still often called *Armillaria mellea,* the original name attributed to all of them. *Armillaria nabsona*, *A. ostoyae*, *A. sinapena*, *A. gallica*, are some others found in Cascadia. For an up-to-date key check **http://botit.botany.wisc.edu/toms_fungi/armkey.html.**

The world's largest living organism is a mycelial mat of *Armillaria ostoyae*, estimated to be 2,385 continuous acres, in the Malheur National Forest in Eastern Oregon. A virulent pathogenic tree-killing fungus, Armillarias are beginning to be appreciated for their ecological roles. They open up the canopy for earlier seral species and saplings to grow in the sunlight. And by attacking one or a small number of trees at a time, they break up the homogeneity of the forest structure, increasing the diversity of levels of succession in the forest.



Cultivation

In this section, we present several simple mushroom growing techniques for the DIY beginner. For a more in-depth explanation and description of this science, we strongly encourage reading Paul Stamet's revolutionary text Mycelium Running: How Mushrooms Can Help Save the Planet (upon which the following section is largely based). Or keep an eye out for our dedicated mycoremediation zine in the future. Other cultivation books are recommended on page 36.

METHOD 1

Of all the common mushrooms commercially cultivated, the Oyster mushroom (*Pleurotus ostreatus*) is by far the easiest to grow and the best recommendation for beginners. It is fast growing on almost any substrate, highly adaptive, and proven capable of effectively and aggressively breaking down petroleum based products.

Oyster spores (collected from a spore print) can be cast directly onto moist, untreated wheat straw in January (the temperature should be around 35-55 degrees). Leave the straw outside and mushrooms should fruit by around March. Requires minimal maintenance as wet straw doesn't get moldy for months in colder temperatures.

Oysters can also be grown in the kitchen on used coffee grounds. Just fill a clean 5 gallon bucket half full with grounds (ask at a coffee house or just check their dumpster) that are moist but not dripping when squeezed. Tear up some fresh Oysters from the store or woods and bury the chunks in a small hole dug out of the center of the grounds and cover with about an inch of grounds. Cover the bucket with a lid, but don't close it tight. Spray the contents with water now and then to keep moist. You will need to experiment with how open or closed the lid is kept, to keep a humid, but not stale, environment in the container. Add more grounds as the old grounds shrink up from being consumed by the mushrooms. Edible results in 3-5 weeks.

METHOD 2

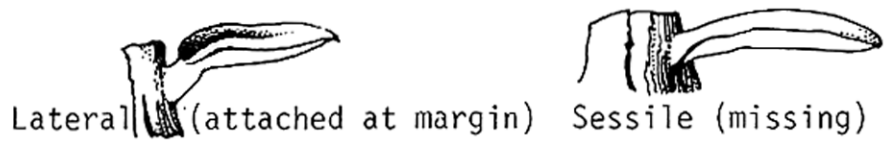
Boil a gallon of water for 10 minutes, cool it, then pour it in a clean container that has not held chemical or milk products. To this add a ¼ tsp salt and 1 tbsp of sugar, mixing thoroughly. Add a teaspoon of spores from a spore print. Cover the container and incubate it at room temperature, shaking vigorously twice a day. Once fine threads of mycelium are barely noticeable, pour around the base of saplings or plants in your garden.

While it is historically more common to grow mushrooms in a laboratory type setting, the complexity and skill involved in these techniques is beyond the size limits of this zine. Here, we present simpler, more natural methods taken from Mycelium Running. These techniques use hardier strains taken directly from the forest so that contamination is less likely to occur as the mushroom has been acclimated to predatory bacterium and molds that are the bane of the indoor cultivator.

Sources of mycelium for remediation:

- Commercial grain or sawdust spawn you purchase
- "Spent" compost from a mushroom farm
- Transplanted mycelium from wild patches
- Cardboard sheet, plug, bunker, or burlap sack spawn
- Spore mass spawn

One of the best mushrooms for companion planting in the garden is the "King" or "Giant Stropharia" (*Stropharia rugoso-annulata*). Grown in wood chips spread around the garden, they are said to benefit certain crops by making nutrients available for plants, and helping the soil hold on to water. They produce yummy fruiting bodies as well.



Mycorestoration

A new science has been developing over the last few years revolving around the use of mushrooms to aid in healing damaged natural environments. Termed ***mycorestoration***, this emerging field has only just begun to be explored. Through experimentation, the possibilities mushrooms hold grow every day. The potential that mycorestoration shows for slowing and/or reversing some of the disastrous impacts humans have made on the natural world in the past century are of great interest to the SLF. Indeed, the spreading of these new revelations was main purpose behind the creation of this zine. We hope the following overview inspires you to learn more and maybe put some of the techniques we present to use as a means to directly contribute to the health of our planet.

****

As we have described above, mushrooms play a key role in the health and vitality of a forest ecosystem. Through the use of powerful enzymes, it has been discovered, certain mushrooms can break down not just organic matter into fertile soil but also many of the toxic products of industrial civilization into non-toxic compounds. Mushroom species have been discovered that can break down petroleum products, effectively cleaning up offshore oil spills. Other are readily able to "soak up" and sequester heavy metals such as cadmium, radioactive cesium, mercury, lead, and arsenic from polluted soil; concentrating them into the mushroom's fruiting body for easy disposal (thus, NEVER eat a mushrooms that was potentially grown on substrates carrying heavy metals). Through the intentional introduction of the right species at the right times, humans can methodically harness the power of our fungal allies to heal damaged environments. Some simple ways to do this in your neighborhood or abroad are presented in the next few pages and break down into 3 categories:

Mycofiltration is the use of mycelium as a membrane for filtering out microorganisms, pollutants, and silt from polluted rivers, watersheds and urban water systems. Like Gaia's natural filter, one square inch of soil can contain 8 miles worth of mycelial interlaced webbing. As water passes through these microscopically fine nets, microorganisms and pollutants are trapped and, theoretically, digested by the mycelium.

Mycoforestry is the practice of intentionally introducing specific, often saprophytic, mushrooms into disturbed or clear-cut forest areas to stimulate decomposition and trigger habitat recovery. By introducing inoculated woodchips (no smaller than 1/8 inch and to a depth no greater than a foot) into such areas, the wood debris left over by logging is quickly transformed into rich soil in a matter of a few years, enabling the damaged environment to recover much faster. Examples of application incude introducing mycelium to help prevent erosion (caused by logging roads, for example) and spreading wood chips inoculated with mycorrhizal mushrooms around the base of saplings to help them grow faster and stronger.

Mycoremediation, the real showstopper, is the use of mushrooms to break down complex toxins into less toxic chemicals. The enzymes created by certain mushrooms to digest organic matter have been shown to break chemical bonds found in petroleum products, herbicides, pesticides, dioxins, PCBs, DDT, Agent Orange, and munitions such as TNT. In other words, the fucked up chemicals get turned into not so fucked up ones. One need only to introduce the mycelium to an affected environment and let the mushrooms do the work. As great of a discovery as this may sound (fucking astonishingly amazing if you ask us!), it is still only slowly gaining acceptance and implementation around the world. We'd like to see that change, especially in our radical communities. The methods for this form of remediation are extremely cheap, relatively easy, and highly effective when compared to other bioremediation techniques. Thus, hella DIY/DIT (Do It Together!).

OYSTER MUSHROOM

Pleurotus spp.

Appearance:

CAP - 4-15 cm, broad. White, tan, gray, pinkish, or brown.
GILLS - White. Crowded, unequal, decurrent.
STALK - Short, thick, or absent.
SPORE COLOR - White.
FLESH - Thick. White.
ODOR - Pleasant.

Growing Pattern:

Their growing pattern is shelf-like, tending to grow in groups on dead trees, hay, or stumps.

Growing Season:

Spring and autumn to first frost. Reappearing during mild winters and in spring and summer with rains.

Edibility:

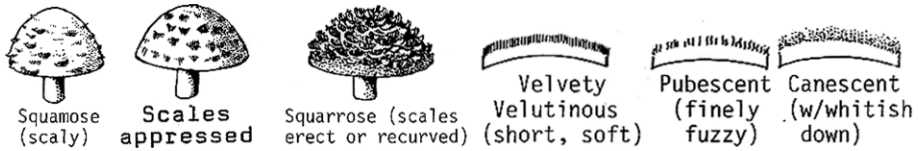
Delicious (and nutritious) grilled or fried. Check for grubs.

Medicinal Value:

Oysters are believed to help reduce blood cholesterol and to have anti-tumor and HIV-inhibiting properties.

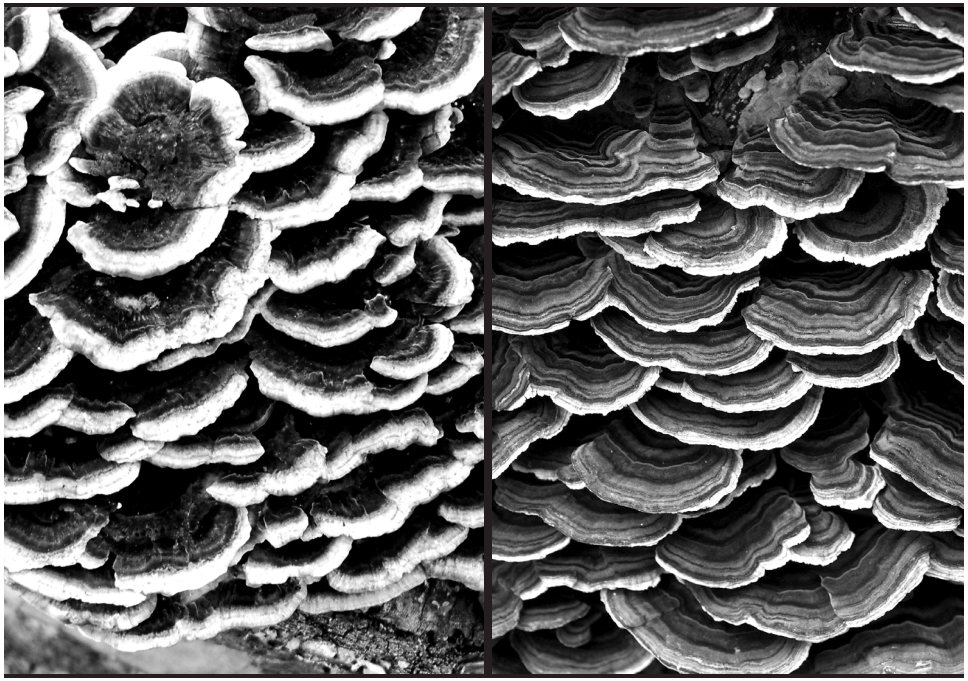
Notes:

The term Oyster Mushroom is used to describe at least 3 similar species (*Pleurotus ostreatus*, *P. pulmonarius* and *P. populinus*), all of which are edible. There are many poisonous look-alikes, but all but *Lentinellus ursinus* have dark spores. Angel Wings (*Pleurocybella porrigens*) and the Elm Oyster (*Hypsizygus ulmarius*) also look similar, have white spores and are edible (although Angel Wings should not be consumed in large quantities). If you find a heavily fruiting log in the woods, carry it home and keep it moist to continue harvesting.



TURKEY TAILS

Tramates versicolor



Appearance:

CAP - 2-7 cm broad. Tough and leathery. Narrow zones of color.
TUBES - Whitish, turning brown with age.
STALK - None.
SPORE COLOR - White.
FLESH - Thin. Leathery. Whitish.
ODOR - None.

Growth Pattern:

Grows shelf-like or in rosettes in groups, rows, or shelving masses on dead and occasionally living hardwoods.

Growing Season:

Grows all year.

Edibility:

Too tough for food though can be used for soup stock, or chewed as a natural chewing gum while hiking.

Medicinal Value:

Immune system enhancer, anti-tumor, anti-viral, anti-bacterial, and anti-oxidant. Useful for infection and inflammation of the upper respiratory, urinary, and digestive tracts, and is used for general immune weakness and tumors. Take as a tea up to 20g 3x/day.

Notes:

Very common once you recognize them. Source of PSK (a.k.a. krestin) a commercial anti-cancer drug in Asia.

Floccose (downy flakes loosely tufted) | Tomentose (matted-woolly) | Hispid (stiff, straight) | Hirsute (med. stiff, + shaggy) | Villose (long, weak) | Strigose (long, coarse)

Quick Chanterelle Sauté

Ingredients

Chanterelles	Tarragon
Sea salt	Cream
Unsalted butter	Shallots

Sprinkle salt into pan, add coarsely broken up chanterelles over high heat and "dry sauté" for a few minutes until the moisture is removed. Add unsalted butter or oil in a good amount, stir, cook for 5 minutes or so, add tarragon, some cream (optional) and some shallots.

Baked Mushrooms

- 1 to 2 pounds mushrooms, cut in halves
- Salt and pepper to taste
- 5 to 6 tablespoons butter
- About 4 tablespoons heavy cream

Spread the mushrooms in a long baking pan. Dust lightly with salt and pepper and dot with butter. Cover and bake in a preheated 350°oven for 25 minutes. Pour the cream into the pan and bring to a boil on top of the stove.

Mushroom Ketchup

Makes 2 pint jars

- 2 pounds mushrooms, drained & trimmed
- 1/4-inch slice fresh ginger peeled, minced
- 5 garlic cloves, minced
- 1/2 cup white distilled vinegar
- One 8-ounce can tomato sauce
- 1/2 teaspoon ground allspice
- 1/2 teaspoon ground cloves
- 1 teaspoon sugar
- 1-1/2 teaspoons salt or more

Puree the mushrooms, ginger, and garlic in small amounts in a blender or food processor until the mixture becomes pastelike. Place it in a heavy pot. Add the remaining ingredients and simmer uncovered for 1 hour, stirring occasionally. Pack into hot sterilized jars. Process in a canner for 15 minutes.

Chanterelle Beer Recipe

This is one of my regular house beers. The chanterelles add an ethereal fruitiness, very delicate and complex. It was inspired by a reference to a German schnapps made from chanterelles.

Yield: 5 gallons (19 liters)

Gravity: 1.083 (20.5 °P)

Alcohol/vol: 5.7 to 6.7%

Color: Amber

Bitterness: 27 IBU

Yeast: Belgian abbey

Maturation: 2 to 3 months

To the secondary either directly add cleaned, chopped Chanterelles or vodka in which Chanterelles have been soaking for 3 weeks.

From **Radical Brewing** by Randy Mosher

All-Grain Recipe:

9.5 lb (4.3 kg)	64%	U.S. two-row lager malt
2.0 lb (0.90 kg)	13%	British two-row pale ale malt
1.5 lb (0.68 kg)	9.5%	Munich malt
1.5 lb (0.68 kg)	9.5%	wheat malt
0.5 lb (227 g)	3%	aromatic/melanoidin (dark Munich)

Extract + Steeped Grain Recipe:

8.0 lb (3.6 kg)	80%	pale dry malt extract
1.0 lb (0.45 kg)	10%	dextrine malt
0.5 lb (227 g)	5%	pale crystal malt
0.5 lb (227 g)	5%	medium crystal malt

Step mash: mash in at 113° F (45° C), hold for half hour, raise to 145° F (63° C), hold for half hour, raise to 156° F (69° C), hold for 45 minutes. Mash out at 170° F (78° C) and sparge until 6.5 gallons are collected. Note: Single infusion mash will work for this beer. Try 154° F for one hour. Add hot water to mash out.

Hops:

0.75 oz (21 g)	90 min	Saaz (3% AA)
1.5 oz (43 g)	30 min	Saaz (3% AA)
1.5 oz (43g)	10 min	Saaz (3% AA)
0.5 oz (14 g)	end of boil	Cascade (3% AA)

Intervenose (with "veins" between gills) | Equal | Unequal (w/short gills) | Forking | Anastomosing (joining crossways)

Cooking & Preservation

Aurum et argentum facile est…boletos mittere difficile est (It is possible to live without gold and silver… but to abstain from eating mushrooms is difficult)
– **Martial 43-104 AD**

When eating mushrooms that are new to you it's important to remember that what one person calls a buttery Chanterelle, another may call an allergy inducing fungal foe. As different people react differently to different foods, we recommend eating a small amount of any mushroom that is new to you to see if you can stomach it. This means eat a cm^3 cooked bit then wait a few hours to days to see if anything happens. It's also a good idea to try only one new mushroom at a time. Never eat raw mushrooms as they can make you sick and your body can't break down their tough cell walls without cooking. And while cooking helps increase digestibility overcooking can remove nutritional value.

Don't eat rotten mushrooms or overindulge in any mushroom eating. And never, **NEVER** eat any mushrooms grown on substrate that potentially carried heavy metals (e.g. mushrooms picked from the side of the road). These practices will very likely get you laid up in the hospital.

When cooked right, some wild mushrooms species taste fucking dank. If you're into that sort of thing we have some recommended cookbooks in the back or just follow these outlines to start with.

DRYING:

Chanterelles, morels, shiitakes, and boletes all dry well. Slice and dry by hanging or with a dehydrator. Mushrooms should be dried to point of being crispy like a potato chip before storing. Store in a clear jar with a tight fitting lid. Reconstitute with any liquid, the mushrooms will absorb their flavor (gravy works well).

PICKLING:

Works best with firm-textured species.

Simmer the following for 15 minutes:

1 cup white vinegar	2 bay leaves
¼ cup balsamic vinegar	1 tsp peppercorns
Some thyme or dill	

Add 10 ounces mushrooms and simmer 10 minutes longer.

Pour all ingredients into a jar (sterilize the jar first by boiling it for a few minutes), seal, and let them pickle.

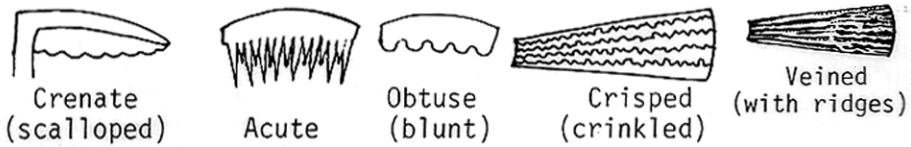
STOCK:

A good way to make use of damaged, maggoty, or decaying mushrooms or ones that just don't last that long. This stock will keep for around 5 days in the fridge or about 6 months in the freezer.

To make 2 quarts:

2 lbs mixed mushrooms	Some parsley
1 onion, roughly chopped	Some thyme
2 carrots, roughly chopped	Salt and pepper
2 stalks of celery, chopped	2 crushed cloves garlic

Put all ingredients in a pot and add enough water to cover. Bring to boil and simmer for an hour and a half. Strain and cool before putting in the fridge or freezer.



PACIFIC GOLDEN CHANTERELLE *Cantharellus formosus*

Appearance:

CAP - 2-14 cm broad. Bright orange to pale yellow-orange, bald, wavy when mature.

"FERTILE RIDGES" - Distinguished from gills by their rounded, blunt edges. Well spaced, shallow, and thick with connecting veins running down stalk. Typically a lighter shade of the cap color, sometimes pinkish.

STALK - NOT hollow, same color as gills and cap, long, tapered towards base. Colored like cap or paler. 4-8 cm long.

SPORE COLOR - Pale yellow.

FLESH - Compact, fibrous in stalk.

ODOR - Strong. Like apricots.

Growing Pattern:

Mycorrhizal , often found in groups on the ground beneath conifers and oaks, NOT in fused clusters.

Growing Season:

Late spring to late autumn.

Edibility:

Popular and delicious. All flavorings are soluble in fat. Good if dried and reconstituted into raccoon gravy.

Notes:

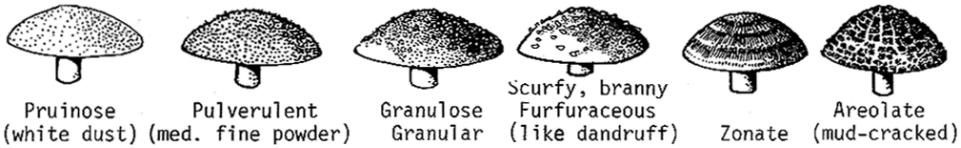
The Oregon state mushroom, *Cantharellus formosus* is very difficult to distinguish from other Chanterelles, particularly *Cantharellus cibarius var. roseocanus* and *C. cascadensis*. *Cantharellus subalbitus*, the White Chantrelle, is bigger and whiter. Don't confuse with the Jack-O-Lantern (thin, crowded gills) or the False Chanterelle (thinner, orange gills and browner cap). One of the first edibles in history discovered hundreds of years ago and appreciated by peasants and nobility alike. Name derived from the greek word *kantharos*, a kind of drinking vessel.

CHANTERELLE BUTTER

0.5 – 1 lb. chanterelles
1 cup butter

1) Clean, dry, and thinly slice chanterelles.
2) Melt butter on low, do not brown.
3) Add mushrooms to melted butter, cover and simmer until mushrooms contain no liquid and are golden.

The cooked chanterelles are now ready to eat and the now flavored butter can be cooled and stored for later use. Great on toast.



RED-BELTED POLYPORE

Fomitopsis pinicola

Appearance:

CAP - 5-40 cm broad, 3-22 cm thick. Hard surface crust. Reddish, cinnamon, or reddish-black.
PORES - White or yellowish. NOT staining brown when scratched.
STALK - None.
SPORE COLOR - Pale yellow-white.
FLESH - White or pale yellow.
ODOR - Fragrant when fresh. Like tobacco.

Growth Pattern:

Saprotrophic, found alone or in groups on dead conifers. Less likely on living trees or conifers. Found on more than 100 trees species.

Growing Season:

Perennial. Growing from spring to first cold spell in autumn.

Edibility:

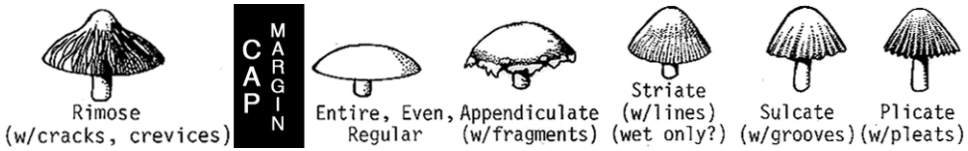
Too tough to eat.

Medicinal Value:

Use daily to reduce inflammation of digestive tract and as a cancer preventative. A mild tea can be made by simmering cut up chunks for at least an hour.

Notes:

When cut open, showing stratified layers (representing one year's growth). This is a great species for making mycopaper.



A Note On Medicinals

Apart from tasting great, many wild mushrooms provide significant health benefits for humans as well. Mushrooms are often low in fat and carbohydrates but high in protein and dietary fiber. Many contain varying amounts of Vitamins B, K, A, & D and essential minerals.

Moreover, the medicinal use of mushrooms dates back thousands--if not tens of thousands--of years in China and to at least the time of Hippocrates in ancient Greece. Various mushroom species naturally excrete high levels of antibiotics to protect themselves from hostile microbes in their habitat. From them, antibiotic compounds useful to humans have been isolated. Research has also shown that various other compounds extracted from some mushrooms have the ability to inhibit the growth of cancer cells. Other mushrooms have shown serious potential to fight HIV and other serious viral infections and still others can help reduce cholesterol. The research of mycomedicinals, like most branches of mycology, is a relatively new field in western science and new discoveries are made all the time.

MUSHROOM TINCTURE/DECOCTION RECIPE

As some of the medicinal properties of mushrooms are alcohol soluble and others are water soluble, a tincture alcohol based and decoction water based blend is desirable when making mycomedicinals. This 30/70 recipe written for Reishis *Ganoderma lucidum* by Michael Moore should work well for other species.

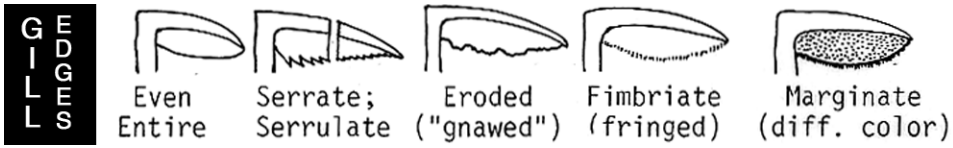
TINCTURE

Dry mushroom and chop. Record weight in grams. Place chunks in jar and cover with pure Everclear 95 alcohol . Use 5 mL Everclear for every gram dried mushroom. After 2 weeks strain, squeeze, and SAVE mushroom as much as possible. Record volume in mL of resul tant tincture. Bottle and label the tincture.

DECOCTION

Put strained mushroom chunks in top of double boiler and add water. Use 10 mL water for every gram original dry weight of mush room. Start cooking down, but don't boil! Plan on 2 hours. Strain off and discard mushroom chunks. Continue cooking down the decoction until you have 2.33 times as much decoction as tincture. Example: for 30mL tincture, cook decoction down to 70mL. This is the amount of decoction which you will need to add to the tincture to give a 30 alcohol/70 decoction extract. When decoction has cooked down to the amount you need, cool the decoction and then add it to the tincture. Store in a dark glass container and label.

Common Medicinals & Associated Benefits	anti-bacterial	anti-candida	anti-inflammatory	anti-oxidant	anti-tumor	blood pressure	blood sugar moderator	cardio-vascular	cholesterol reducer	immune enhancer	kidney tonic	liver tonic	lungs/respiratory	nerve tonic	sexual potentiator	stress reducer
Agaricus blazei (Himematsutake)					✓	✓		✓		✓	✓					
Cordyceps sinensis (Cordyceps)	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ganoderma applanatum (Artist's Conk)	✓		✓		✓									✓		
Ganoderma lucidum (Reishi / Ling Chi)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
Ganoderma oregonense (Oregon Reishi)	✓				✓				✓		✓			✓	✓		
Grifola frondosa (Maitake)	✓	✓			✓	✓	✓	✓		✓	✓			✓			✓
Hericium erinaceus (Lion's Mane)	✓		✓		✓						✓						
Lentinula edodes (Shiitake)	✓	✓			✓	✓	✓	✓		✓	✓	✓	✓			✓	✓
Pleurotus ostreatus (Oyster Mushroom)	✓					✓	✓		✓	✓					✓		
Tramates versicolor (Turkey Tail / Yun Zhi)	✓			✓	✓	✓					✓	✓	✓				



OREGON REISHI

Ganoderma oregonense

Appearance:

CAP - Shelf-like with shiny surface crust. Reddish or mahogany. 6" or larger when full grown.

PORES - White and soft or corky when fresh, turning satin brown when scratched.

STALK - Absent or attached to side of cap.

SPORE COLOR - Brown.

Growing Pattern:

On dead or dying conifers from Alaska to California.

Growing Season:

Year round.

Edibility:

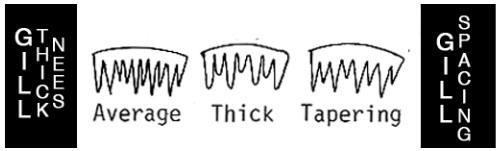
Not edible. Used medicinally as a tea, powder or extract.

Medicinal Value:

Believed to promote good health, longevity, and prevent cancer.

Notes:

A relative, the true Reishi (*Ganoderma lucidum*), is called *ling chih*, the "mushroom of immortality," in China, where it has been used for millenia to cure heart arrythmias, palpitations, chronic brochitis, hepatitis, Alzheimer's disease, diabetes, and to kill cancer. The basic tincture recipes on the following page work great with this mushroom for use as a general tonic and immune system enhancer.



Crowded
Close

Distant
Subdistant

MORELS

Morchella esculenta & elata

Appearance:

CAP - Round to cone-shaped. Honeycombed with pits and ridges. Completely intergrown with stalk. *M. esculenta* is buff, tan, or yellow-brown. *M. elata* is black, grey, olive-brown, or reddish-brown. 2-6 cm broad, 2-10cm high.

STALK - Without a sack or cup at base. White or tinged grey.

SPORE COLOR - White.

FLESH - Whitish. Entire mushroom hollow.

ODOR - NOT obnoxious.

Growth Pattern:

Some say Morels follow no growth pattern and grow where they please. The following are suggestions for where to start looking. Blacks (*M. elata*) are found under the deep leaf debris of maple, poplar, and beech trees. Yellows (*M. esculenta*) are almost always in association with ash trees. Sometimes around trees dying from dutch elm disease (e.g. *Ulmus americana*) in well drained and humus-rich soil. Easily missed as they tend to hide under debris or blend in with pinecones so use a stick and check all suspicious bumps and piles. Often appearing in areas destroyed by fire or landslide the year prior. Do not always produce reliable yearly crops.

Growing Season:

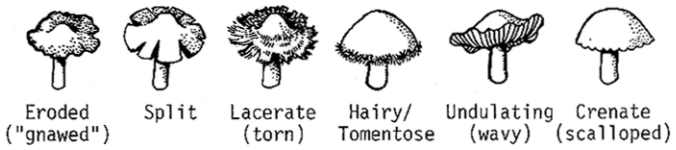
Early Spring (mid March - end of May).

Edibility:

Gourmet. One of the most highly regarded wild edibles.

Notes:

One of the most coveted and sought after wild mushrooms due to their tricky nature. Competition can be fierce. People have been known to intentially cause forest fires to produce flushes the following year (a practice we **DO NOT ENCOURAGE**!). Morels have no super close look-alikes but watch out for the Gyromitra and Helvella genuses which they can be confused for.



Free
remote/close

SHRIMP MUSHROOM

Russula xerampelina

Appearance:

CAP - 5-30 cm. Red to purple-brown, sometimes with green or brown. Broadly domed to flat. Sticky when moist adhering to debris when dry.

GILLS - Whitish to yellowish with brownish stains, attached to stalk.

STALK - Often partly or entirely rosy pink at base, bruising yellow to brown. Brittle, snapping like chalk. Like any Russula, it will burst to pieces when thrown into a tree. Flesh inside stalk spongy to brownish. Veil and ring absent.

SPORE COLOR - Yellowish.

FLESH - Whitish, darkening when exposed to air. Thick. Soft.

ODOR - Of cooked crustaceans or herring.

Growing Pattern:

Mycorrhizal, found on the ground around conifers especially Douglas-firs, hemlock, and pines.

Growing Season:

Summer to late autumn.

Edibility:

Delicious. Caps can be sauteed, toasted, stuffed, or broiled.

Notes:

Shrimpies have lots of look-alikes that probably won't kill you, but might upset your tummy (and taste buds!). Make sure the taste when raw is mild, NOT peppery, and the stalk turns yellowish then brown when scratched. Fishy scent when old.

POTENT PSILOCYBES

Psilocybe cyanescens

Appearance:

CAP - 1.5-4 cm. Domed when young, flat to wavy with maturity. Reddish brown, dark brown, caramel brown, fading to tan as it dries. Bald, slightly sticky when moist.

GILLS - Brown and darkening with age.

STALK - White, bluing when bruised. Fibrous veil present when young, not forming ring. Slender.

SPORE COLOR - Deep purple. NEVER brown, yellow- or rusty-brown.

Growing Pattern:

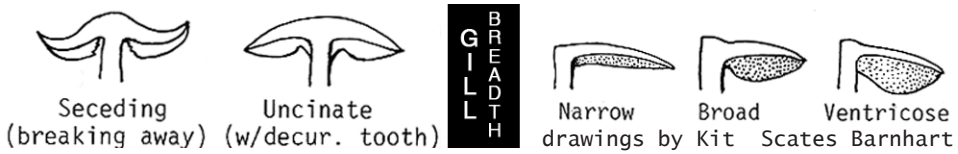
Saprotrophic, found in wood chips, landscaped areas, and edges of woods.

Growing Season:

September - November.

Edibility:

Strongly hallucinogenic.

Notes:

Can be tricky to ID. Be sure to check other sources as poisonous look-alikes do exist. Mycologist and author Paul Stamets has been quoted stating that if you pick a mushroom that both bruises blue AND has a purple spore print, eat it because it will likely get you high. See the Sacred Mushrooms section on page 31 for more information about the history and effects of psychedelic mushrooms such as these.